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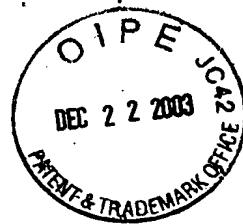
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Time Controls With Enhanced Timing Range
Inventor: William P. Tanguay
Application No. 09/903,368
Attorney Docket No. 99545 (4254-15)

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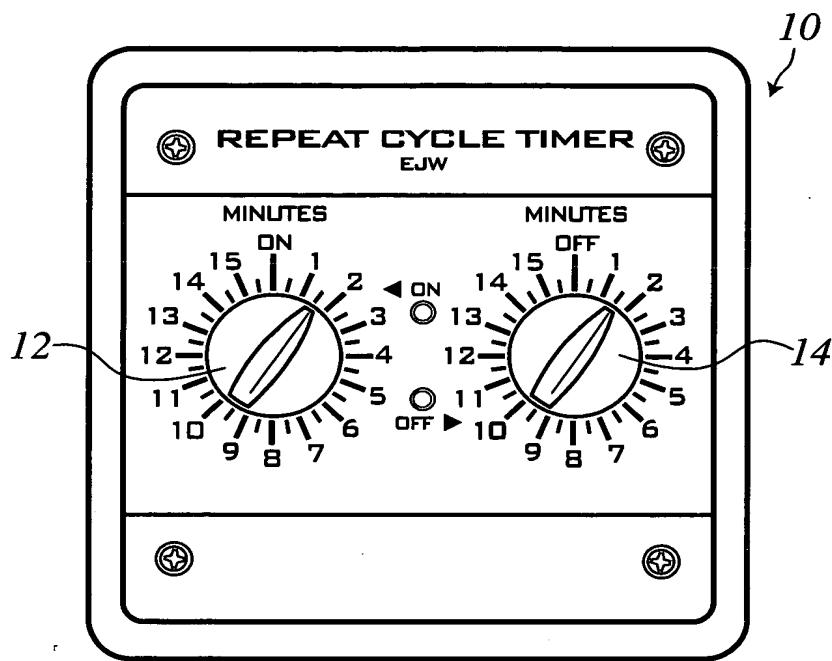


FIG. 1
PRIOR ART

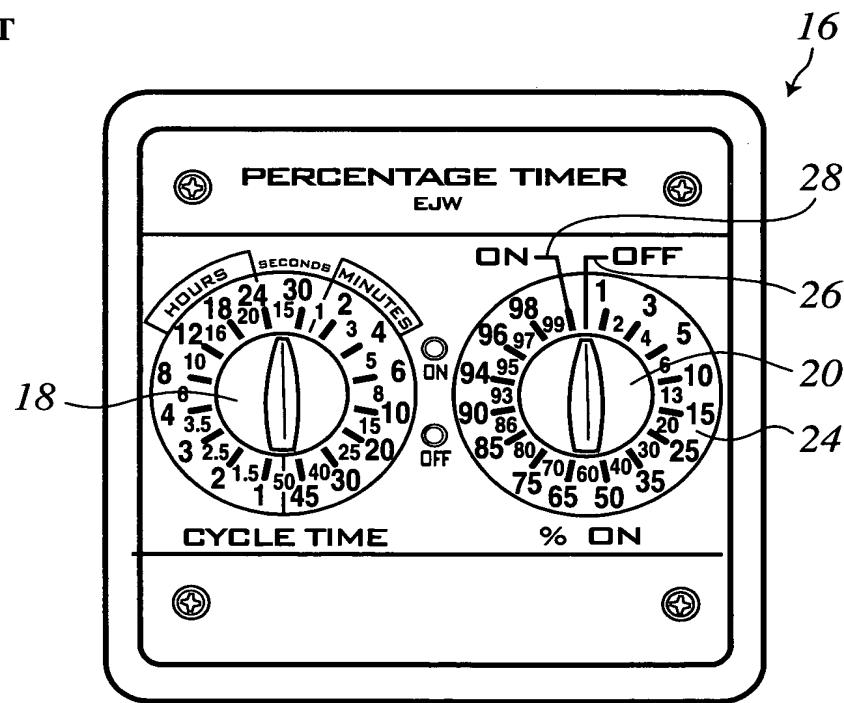


FIG. 2



Time Controls With Enhanced Timing Range
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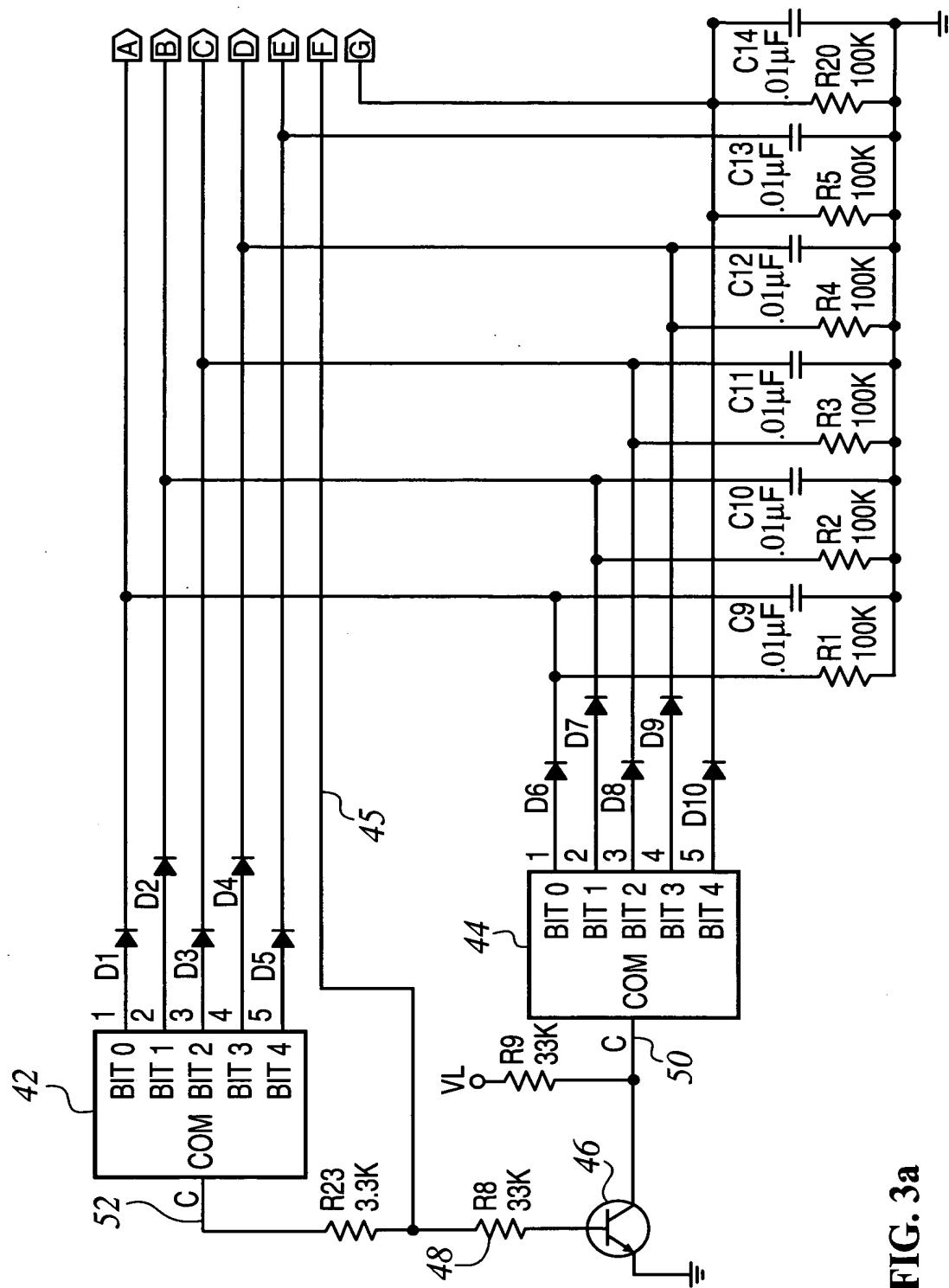


FIG. 3a

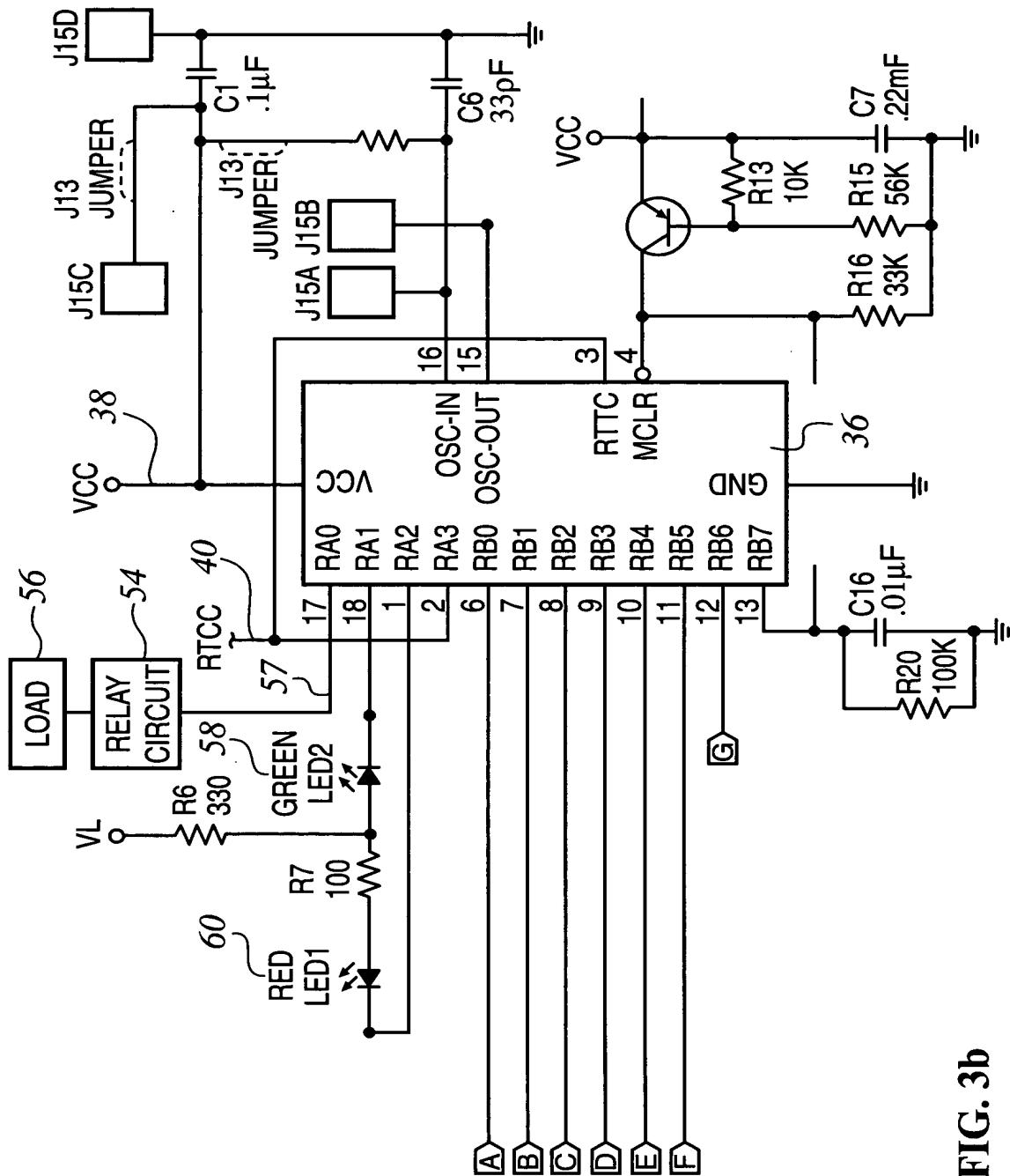


FIG. 3b



Time Controls With Enhanced Timing Range
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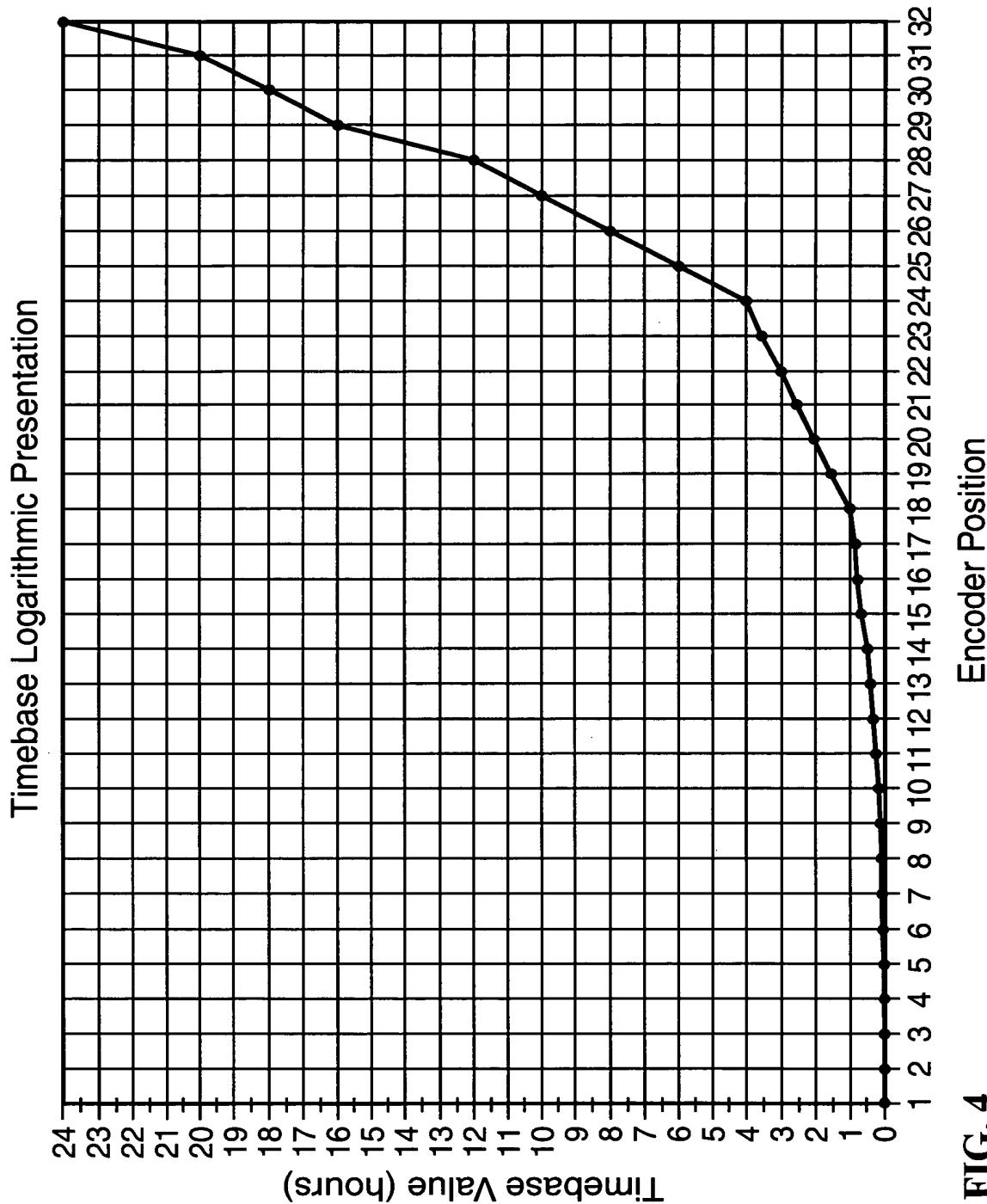


FIG. 4



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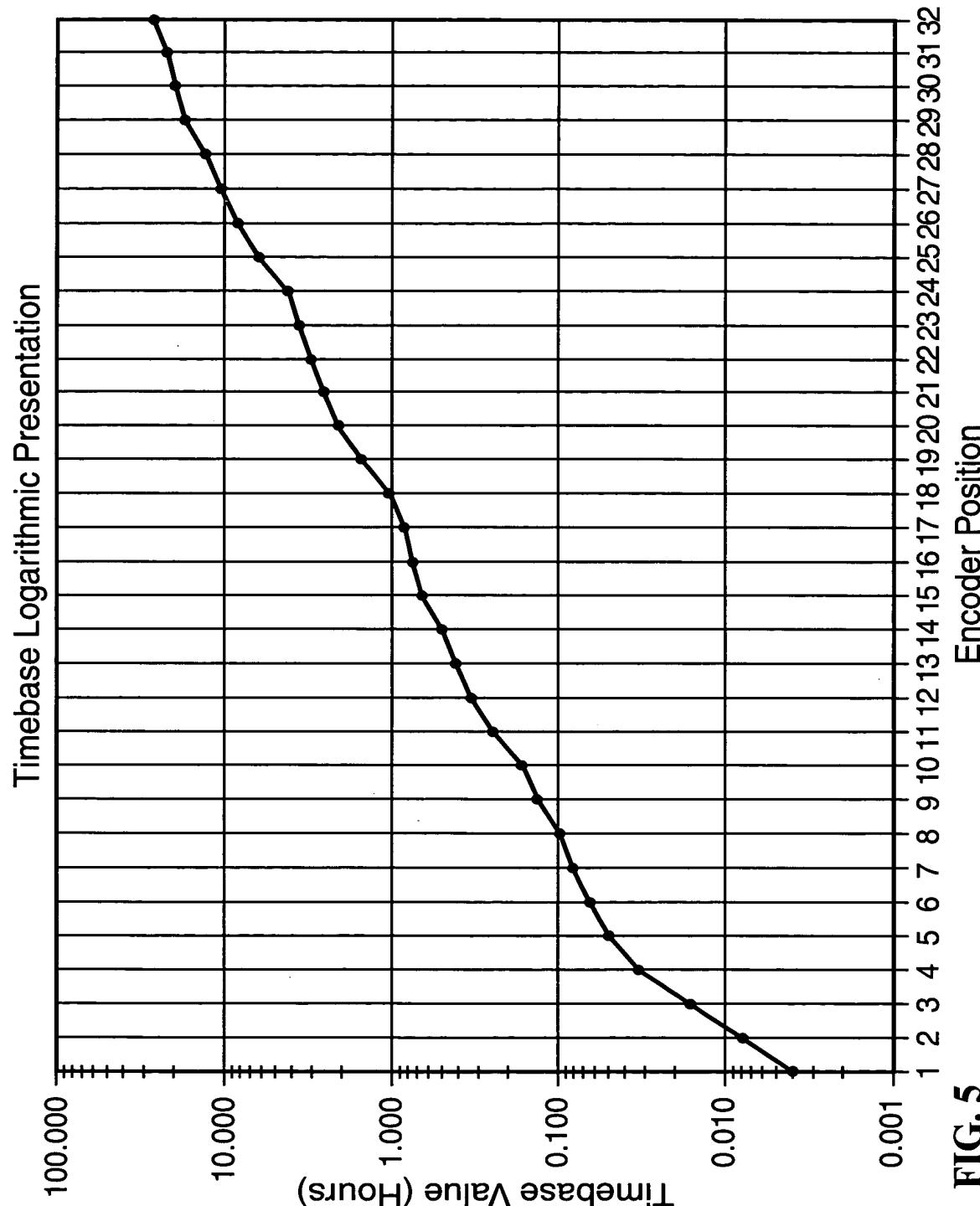


FIG. 5

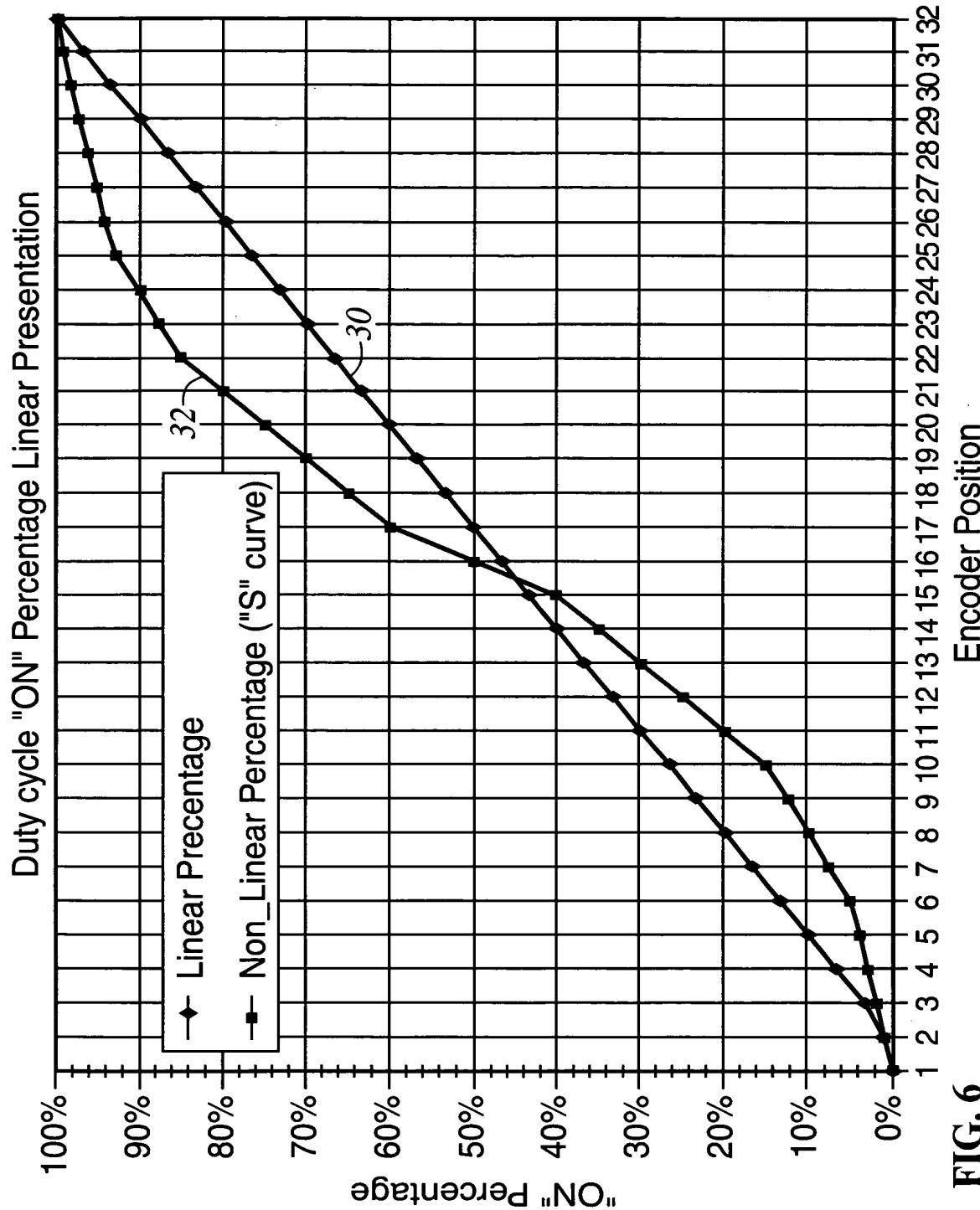


FIG. 6
Encoder Position



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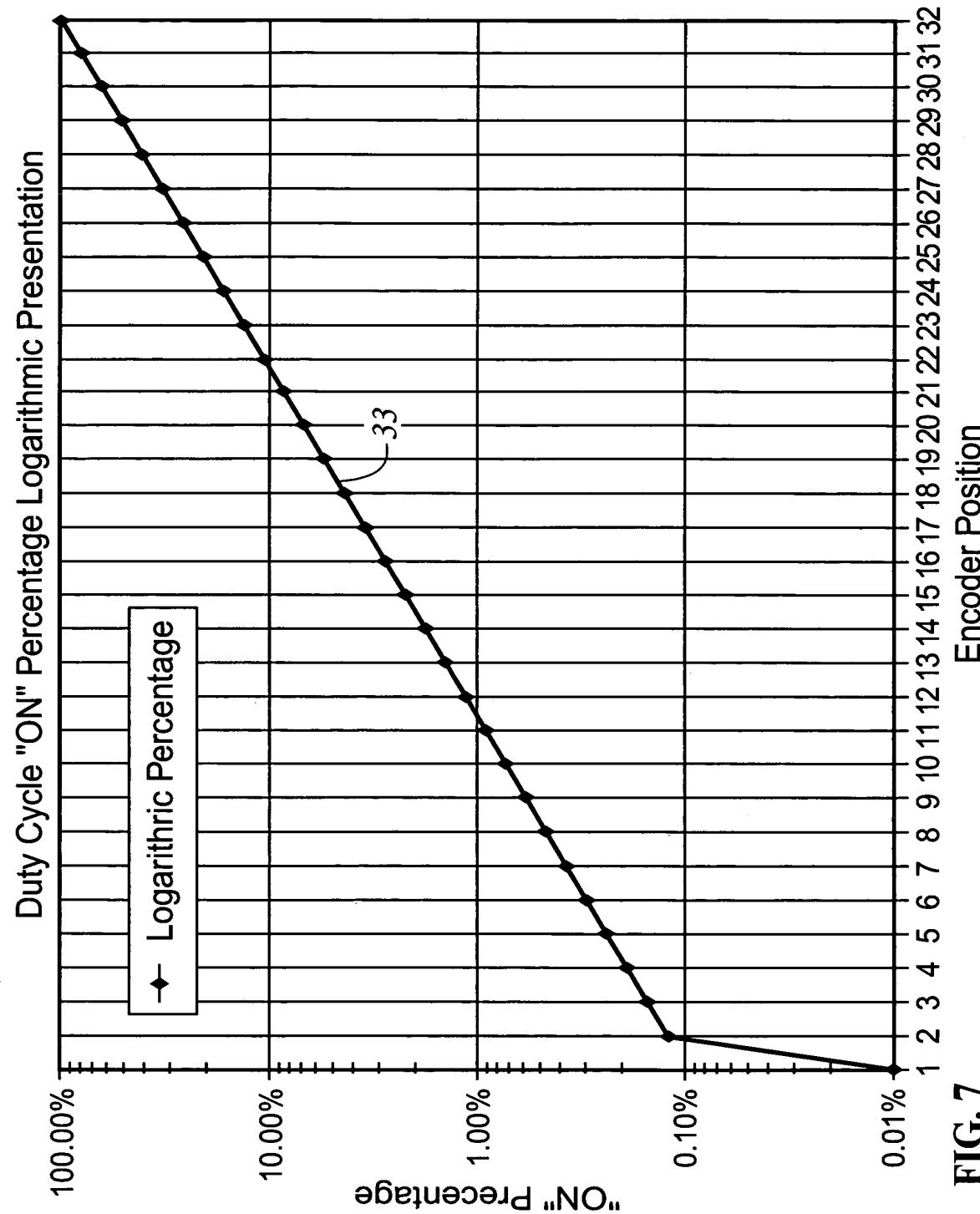


FIG. 7



Time Controls With Enhanced Timing Range
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TIMEBASE DIAL				
Position	Hours	Minutes	Seconds	Hours
1			15	0.00417
2			30	0.00833
3		1		0.01667
4		2		0.03333
5		3		0.05000
6		4		0.06667
7		5		0.08333
8		6		0.10000
9		8		0.13333
10		10		0.16667
11		15		0.25000
12		20		0.33333
13		25		0.41667
14		30		0.50000
15		40		0.66667
16		45		0.75000
17		50		0.83333
18		60		1.00000
19	1	30		1.50000
20	2	0		2.00000
21	2	30		2.50000
22	3	0		3.00000
23	3	30		3.50000
24	4	0		4.00000
25	6	0		6.00000
26	8	0		8.00000
27	10	0		10.00000
28	12	0		12.00000
29	16	0		16.00000
30	18	0		18.00000
31	20	0		20.00000
32	24	0		24.00000

FIG. 8a



Time Controls With Enhanced Timing Range
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DUTY CYCLE DIAL			
Position	Linear Percentage	Non-linear Percentage ("S" curve)	Logarithmic Percentage
1	0%	0%	0.01%
2	1%	1%	0.12%
3	3%	2%	0.16%
4	7%	3%	0.20%
5	10%	4%	0.24%
6	13%	5%	0.30%
7	17%	8%	0.38%
8	20%	10%	0.48%
9	23%	13%	0.59%
10	27%	15%	0.74%
11	30%	20%	0.93%
12	33%	25%	1.16%
13	37%	30%	1.45%
14	40%	35%	1.81%
15	43%	40%	2.26%
16	47%	50%	2.83%
17	50%	60%	3.53%
18	53%	65%	4.42%
19	57%	70%	5.52%
20	60%	75%	6.90%
21	63%	80%	8.62%
22	67%	85%	10.77%
23	70%	88%	13.46%
24	73%	90%	16.82%
25	77%	93%	21.02%
26	80%	94%	26.26%
27	83%	95%	32.82%
28	87%	96%	41.01%
29	90%	97%	51.25%
30	93%	98%	64.04%
31	97%	99%	80.03%
32	100%	100%	100.00%

FIG. 8b